

WHAT IS CLAIMED IS:

1. A computer-implemented state machine for processing business objects representing collaborations between business entities, comprising:
at least one business object, the business object representing a collaboration
5 between a plurality of business entities; and
a plurality of graphs represented in computer-readable media, each graph corresponding to a particular collaborating business entity, the plurality of graphs being generated using a plurality of text files, at least a first of the text files comprising state information associated with the business object, at least a second of
10 the text files comprising action information associated with the business object, and at least a third of the text files comprising transition information associated with the business object.
2. The state machine of Claim 1, wherein the graphs are stored in a state
15 transition matrix for the state machine.
3. The state machine of Claim 2, wherein the graphs are adjacency graphs and the state transition matrix is a multidimensional adjacency matrix.
- 20 4. The state machine of Claim 2, wherein the state transition matrix comprises three dimensions.
5. The state machine of Claim 2, wherein a first dimension of the state transition matrix represents a state identifier associated with the business object, a
25 second dimension of the state transition matrix represents an action identifier associated with the business object, a third dimension of the state transition matrix represents an entity identifier associated with the business object, and information stored in the state transition matrix comprises state values resulting from a computation performed by the state machine.
- 30 6. The state machine of Claim 1, wherein the collaborating business entities comprise at least a customer and a supplier.

7. The state machine of Claim 1, wherein the state information comprises at least one of state identifier information, state handler class information, synchronization requirement information, and super-state relationship information.

5 8. The state machine of Claim 1, wherein the action information comprises at least one of allowed action information and update rule information.

9. The state machine of Claim 1, wherein the transition information comprises at least one of entity type information, starting state information, action
10 taken information, and resulting state information.

10. The state machine of Claim 1, wherein the state machine is one of a plurality of state machines within a computer-implemented system for collaboration between business entities, each state machine comprising a state transition matrix that
15 contains information representing a plurality of graphs for the state machine and that has been generated using a plurality of text files for the state machine, each graph corresponding to a particular collaborating business entity.

11. A computer-implemented method for facilitating processing by a state machine of business objects representing collaborations between business entities, comprising:

accessing at least one business object, the business object representing a
5 collaboration between a plurality of business entities; and

generating a plurality of graphs represented in computer-readable media, each graph corresponding to a particular collaborating business entity, the plurality of graphs being generated using a plurality of text files, at least a first of the text files comprising state information associated with the business object, at least a second of
10 the text files comprising action information associated with the business object, and at least a third of the text files comprising transition information associated with the business object.

12. The method of Claim 11, further comprising storing the graphs in a
15 state transition matrix for the state machine.

13. The method of Claim 12, wherein the graphs are adjacency graphs and the state transition matrix is a multidimensional adjacency matrix.

14. The method of Claim 12, wherein the state transition matrix comprises
20 three dimensions.

15. The method of Claim 12, wherein a first dimension of the state transition matrix represents a state identifier associated with the business object, a
25 second dimension of the state transition matrix represents an action identifier associated with the business object, a third dimension of the state transition matrix represents an entity identifier associated with the business object, and information stored in the state transition matrix comprises state values resulting from a computation performed by the state machine.

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16. The method of Claim 11, wherein the collaborating business entities comprise at least a customer and a supplier.

17. The method of Claim 11, wherein the state information comprises at least one of state identifier information, state handler class information, synchronization requirement information, and super-state relationship information.

5 18. The method of Claim 11, wherein the action information comprises at least one of allowed action information and update rule information.

19. The method of Claim 11, wherein the transition information comprises at least one of entity type information, starting state information, action taken
10 information, and resulting state information.

20. The method of Claim 11, wherein the business object is processed using one of a plurality of state machines within a computer-implemented system for collaboration between business entities, each state machine comprising a state
15 transition matrix that contains information representing a plurality of graphs for the state machine and that has been generated using a plurality of text files for the state machine, each graph corresponding to a particular collaborating business entity.

21. Software for facilitating processing by a state machine of business objects representing collaborations between business entities, the software being embodied in computer-readable media and when executed operable to:

access at least one business object, the business object representing a collaboration between a plurality of business entities; and

generate a plurality of graphs represented in computer-readable media, each graph corresponding to a particular collaborating business entity, the plurality of graphs being generated using a plurality of text files, at least a first of the text files comprising state information associated with the business object, at least a second of the text files comprising action information associated with the business object, and at least a third of the text files comprising transition information associated with the business object.

22. The software of Claim 21, further operable to store the graphs in a state transition matrix for the state machine.

23. The software of Claim 22, wherein the graphs are adjacency graphs and the state transition matrix is a multidimensional adjacency matrix.

24. The software of Claim 22, wherein the state transition matrix comprises three dimensions.

25. The software of Claim 22, wherein a first dimension of the state transition matrix represents a state identifier associated with the business object, a second dimension of the state transition matrix represents an action identifier associated with the business object, a third dimension of the state transition matrix represents an entity identifier associated with the business object, and information stored in the state transition matrix comprises state values resulting from a computation performed by the state machine.

26. The software of Claim 21, wherein the collaborating business entities comprise at least a customer and a supplier.

27. The software of Claim 21, wherein the state information comprises at least one of state identifier information, state handler class information, synchronization requirement information, and super-state relationship information.

5 28. The software of Claim 21, wherein the action information comprises at least one of allowed action information and update rule information.

29. The software of Claim 21, wherein the transition information comprises at least one of entity type information, starting state information, action taken information, and resulting state information.

30. The software of Claim 21, wherein the software is associated with one of a plurality of state machines within a computer-implemented system for collaboration between business entities, each state machine comprising a state transition matrix that contains information representing a plurality of graphs for the state machine and that has been generated using a plurality of text files for the state machine, each graph corresponding to a particular collaborating business entity.

31. A computer-implemented state machine for processing business objects representing collaborations between business entities, comprising:

at least one business object, the business object representing a collaboration between a plurality of business entities; and

5 a plurality of graphs represented in a computer-readable medium, each graph corresponding to a particular collaborating business entity, the plurality of graphs being generated using a plurality of text files:

at least a first of the text files comprising state information associated with the business object, the state information comprising at least one of state
10 identifier information, state handler class information, synchronization requirement information, and super-state relationship information;

at least a second of the text files comprising action information associated with the business object, the action information comprising at least one of allowed action information, and update rule information; and

15 at least a third of the text files comprising transition information associated with the business object, the transition information comprising at least one of entity type information, starting state information, action taken information, and resulting state information;

the graphs being stored in a three-dimensional state transition matrix for the
20 state machine, a first dimension of the state transition matrix representing a state identifier associated with the business object, a second dimension of the state transition matrix representing an action identifier associated with the business object, a third dimension of the state transition matrix representing an entity identifier associated with the business object, and information stored in the state transition
25 matrix comprising state values resulting from a computation performed by the state machine.

32. A computer-implemented method for aggregating state information associated with a composite business object, the composite business object representing at least one collaboration between a plurality of business entities, the method comprising:
- 5 retrieving the state information for the composite business object from a computer-readable medium; and
- determining a state for the composite business object based on an assigned priority level for a state in a hierarchy of states associated with the composite business object, each state in the hierarchy of states having a corresponding assigned priority
- 10 level.
33. The method of Claim 32, wherein the assigned priority level comprises a highest priority level for the hierarchy of states.
- 15 34. The method of Claim 32, wherein the state information is stored as values in a multidimensional state transition matrix for a state machine.

35. Software for aggregating state information associated with a composite business object, the composite business object representing at least one collaboration between a plurality of business entities, the software being stored in computer-readable media and when executed operable to:

5 retrieve the state information for the composite business object from a computer-readable medium; and

determine a state for the composite business object based on an assigned priority level for a state in a hierarchy of states associated with the composite business object, each state in the hierarchy of states having a corresponding assigned priority
10 level.

36. The software of Claim 35, wherein the assigned priority level comprises a highest priority level for the hierarchy of states.

15 37. The software of Claim 35, wherein the state information is stored as values in a multidimensional state transition matrix for a state machine.

38. A computer-implemented state aggregator for aggregating state information associated with a composite business object, the composite business object representing at least one collaboration between a plurality of business entities, the state aggregator comprising:

5 means for retrieving the state information for the composite business object from a computer-readable medium; and

means for determining a state for the composite business object based on an assigned priority level for a state in a hierarchy of states associated with the composite business object, each state in the hierarchy of states having a corresponding assigned
10 priority level.

39. The state aggregator of Claim 38, wherein the assigned priority level comprises a highest priority level for the hierarchy of states.

15 40. The state aggregator of Claim 38, wherein the state information is stored as values in a multidimensional state transition matrix for a state machine.